

## CLAIMS

1. Process for detecting the bending angle of a plate sheet that has been bent along a bending line, comprising the following step:

5        - generating at least two flows of compressed air in two matrix die points that are totally or partially covered by the plate sheet during its bending step;

measuring the pressure variation between the two flows of compressed air during said bending step;

processing the measured pressure values and comparing them with predetermined sample values through calibration.

10        2. Process according to claim 1, characterised in that it comprises: a first flow of compressed air that is directed perpendicular to the plate sheet before its bending and is placed on the matrix die next to the plane sheet-bearing surface next to the matrix die groove; a second flow directed perpendicular to the slot surface.

15        3. Process according to claim 1, characterised in that it provides for measuring the pressure of a pair of compressed air flows on both slot faces.

4. Process according to claim 1, characterised in that the pressure measure between the two air flows is performed with a pressure transducer of the differential type, connected to the two pneumatic supply ducts of a pair of orifices on the matrix die.

20        5. Device for measuring the bending angle characterised in that it comprises a compressed air system on whose supply line it provides a system pressure reducer; two pairs of orifices arranged on the matrix die face that get in contact with the plate sheet in symmetrical positions with respect to the vertical axis of the matrix die groove apex, each one of said orifices being supplied by a respective flow of compressed air.

25        6. Device according to claim 5, characterised in that the mean of measures of plate bearing angles onto the matrix die is performed by mutually pneumatically connecting the

two orifices which are external to the matrix die slot and the two orifices which are internal to the slot itself.

7. Process according to claim 4, characterised in that the pressure difference between the two air flows can be kept constant at a zero value, by means of a servo-controlled device comprising two orifices and a shutter, which is able to externally compensate for the covering differences of orifices on the matrix die generated by the plate abutment, and characterised in that the angle measure is referred to the position measure of the external compensating device.

8. Process according to claim 7, characterised in that, in order to more easily detect the small variations with respect to a provided bending angle, the servo-controlled device is kept in a position corresponding to the provided angle and the pressure difference is measured, provided by the transducer around the zero value.

9. Process according to claim 7, characterised in that the common compressed air supply line is periodically shut off to allow compensating for differential pressure sensor zero errors.

10. Process according to any one of the previous claims, characterised in that a single pressure measuring system can be used with different pairs of orifices obtained in different matrix dies, by selecting every time the pairs of orifices, by means of solenoid valves on respective pneumatic supply ducts.

20 11. Process according to claim 1, characterised in that the pair of orifices for measuring the bending angle is obtained on the punch.